

Approved For Release 2004/01/15 : CIA-RDP66B00762R000100110001-1

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PROJECT
"TOWN HALL"
AIR LAUNCHED
PHOTO RECONNAISSANCE
SATELLITE

NRO REVIEW COMPLETED

USAF review(s) completed.

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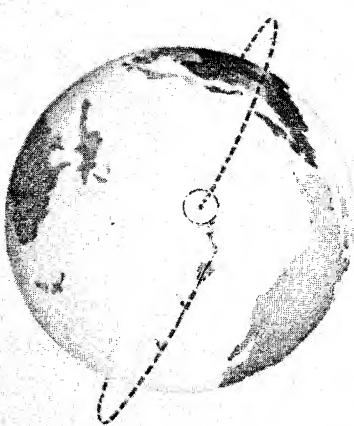
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ORIGINAL PROPOSAL

Concept

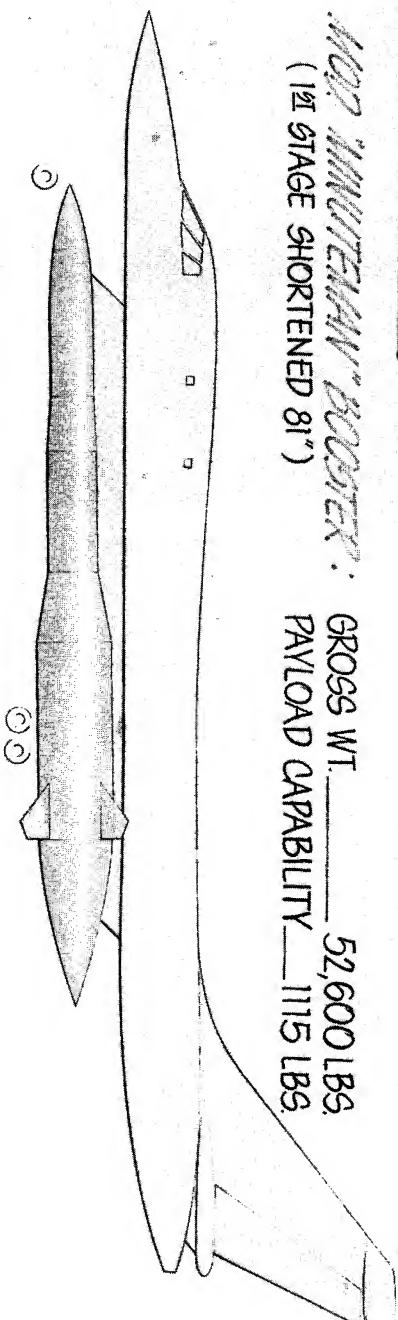
- AIR LAUNCH FOR:
- QUICK REACTION
- LAUNCH AND RECOVERY FLEXIBILITY
- SECURE OPERATIONS
- INCREASED PAYLOAD CAPABILITY
- OMNI-DIRECTIONAL TARGET APPROACH
- *SINGLE PASS SYSTEM FOR:*
- SIMPLICITY
- INVULNERABILITY

Configuration



Growth Capability to Multiple Pass Operation

NO. 1 MULTISTAGE "CARRIER": GROSS WT. 52,600 LBS.
(1ST STAGE SHORTENED 81") PAYLOAD CAPABILITY 1115 LBS.



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SUBSEQUENT STUDIES

MISSILE DESIGN

- INCREASED PAYLOAD BY INCREASED BOOSTER SIZE
(MINUTEMAN AND NEW BOOSTERS)
- EVALUATION OF ENVIRONMENTAL EFFECTS ON MOTORS

AIRPLANE STUDIES

- DETERMINE MAX. BOOSTER SIZE COMPATIBLE WITH B-58
- WIND TUNNEL TEST PROGRAM & A/P PERFORMANCE STUDY

PERFORMANCE

- OPTIMUM COMBINATION OF MISSILE/B-58 PERFORMANCE
- COMPARISON OF GROUND AND AIR LAUNCHING

PAYOUT

- ADVANCED GUIDANCE AND CONTROL CONCEPTS
- MULTIPLE PASS REQUIREMENTS AND CAPABILITIES

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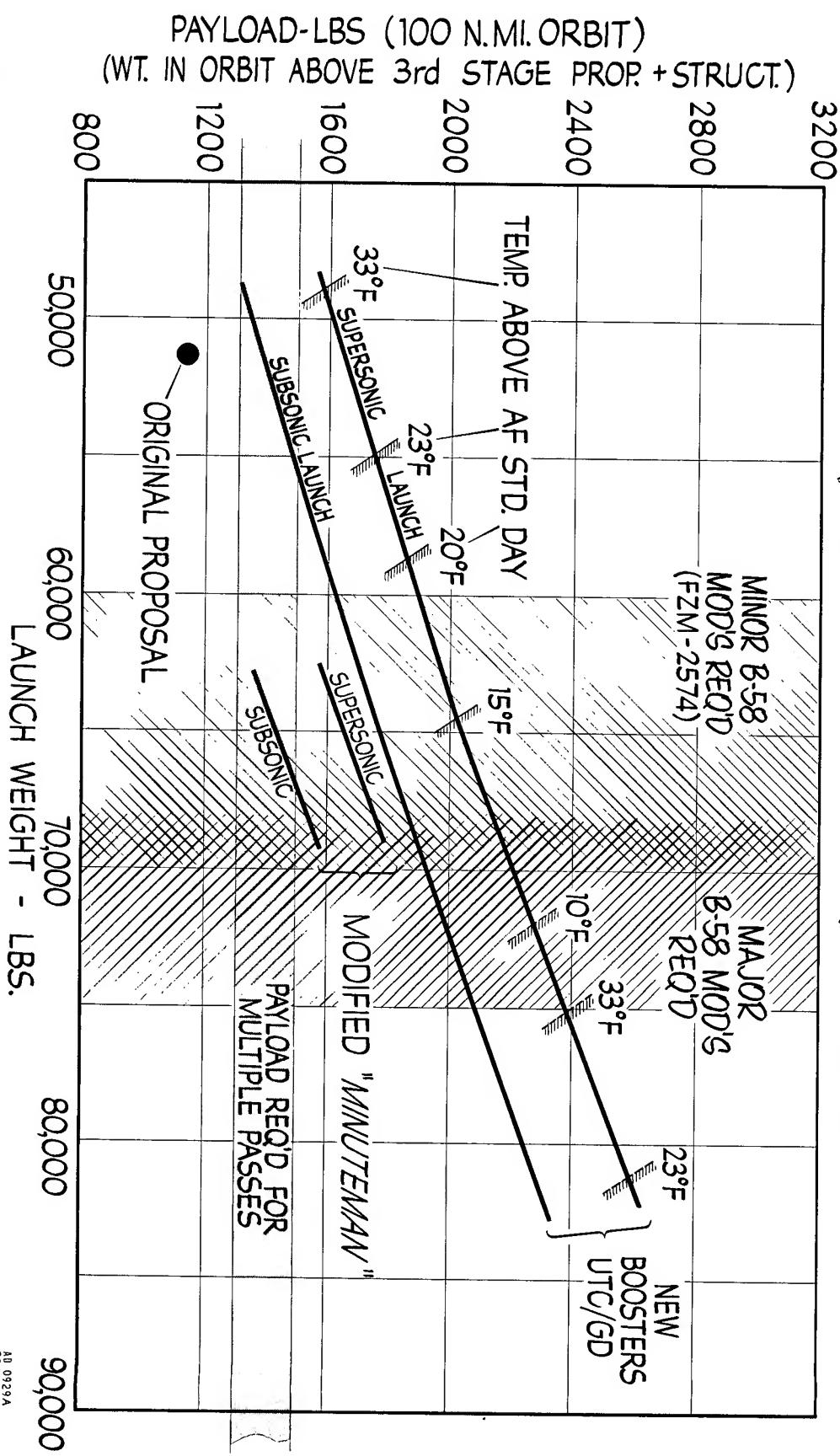
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SUMMARY OF STUDY RESULTS

ACCELERATION LIMITS:
J79-5B ENGINES
(PRESENT B-58)
IMPROVED
J79 ENGINES



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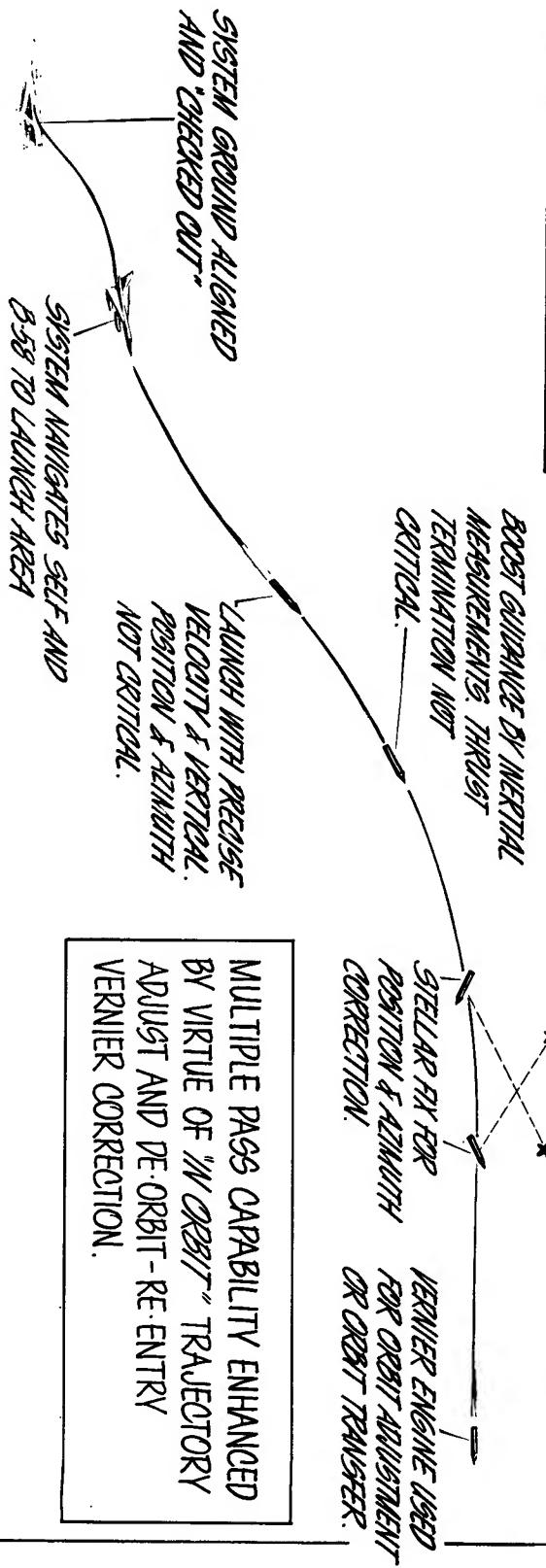
INTEGRATED GUIDANCE & CONTROL SYSTEM

(Based on System under development by United Aircraft)

SYSTEM COMPONENTS

- HIGH QUALITY INERTIAL PLATFORM
- WIDE ANGLE STAR MONITOR
- MEGACYCLE DIGITAL COMPUTER
- HYPERGOLIC VERNIER PROPULSION
- COLD GAS ATTITUDE CONT'L

SYSTEM OPERATION



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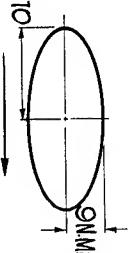
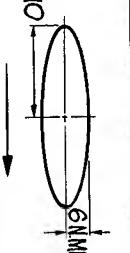
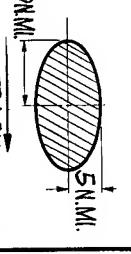
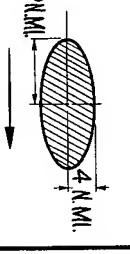
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INTEGRATED VS. CONVENTIONAL SYSTEM COMPARISON

PERFORMANCE FEATURES

MULTI-PASS MISSION (8 passes, no tracking)

ON-ORBIT POSITION ACCURACY	CONVENTIONAL PURE INERTIAL SYSTEM	INTEGRATED STELLAR INERTIAL/GPS SVS.
110 NM		
DE-ORBIT RECOVERY ACCURACY		

OPERATIONAL FEATURES

FOR INTEGRATED SYSTEM

- Launch w/o accurate Pos. & Az.
- Orbit changes possible during mission
- Thrust-termination not critical
- Vernier recovery guidance pos. visible

AVAILABILITY

- Conventional system — 9 months
- Integrated system — 18 months

RECOMMENDED APPROACH

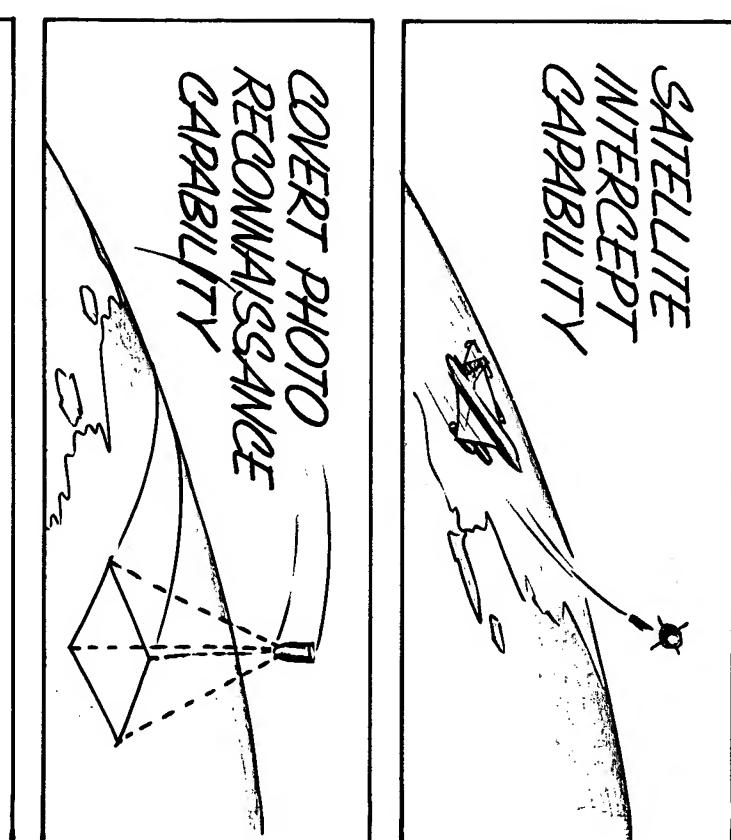
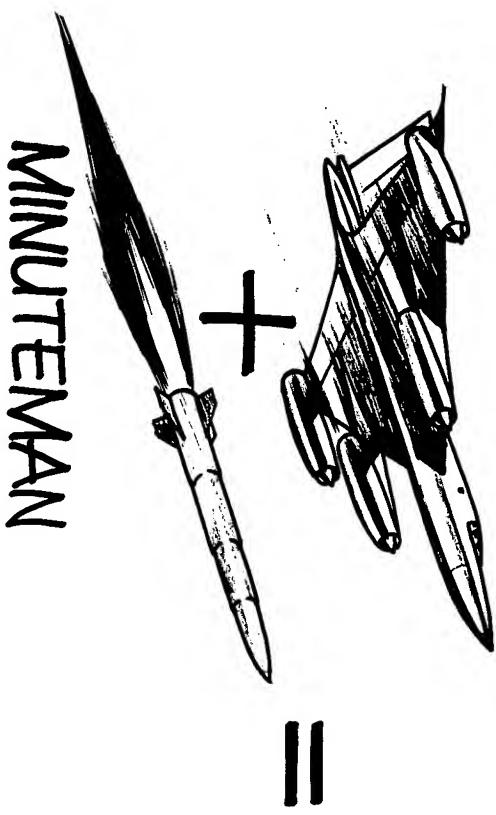
- Interim conventional system
- Grow into fully integrated system

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SYSTEM POTENTIAL

B-58



- MINUTEMAN*
- MOBILE ("INEXPENSIVE")
LAUNCH CAPABILITY*
- OTHER APPLICATIONS*
- EQUATORIAL SATELLITES
 - ADVANCED ICBM POTENTIAL
 - MOBILE SPACE PROBES

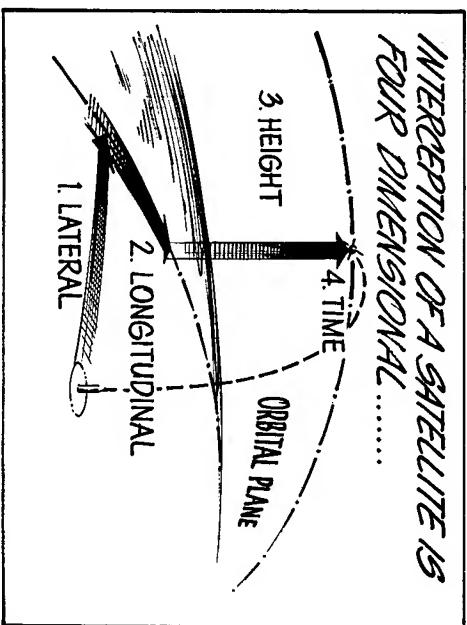
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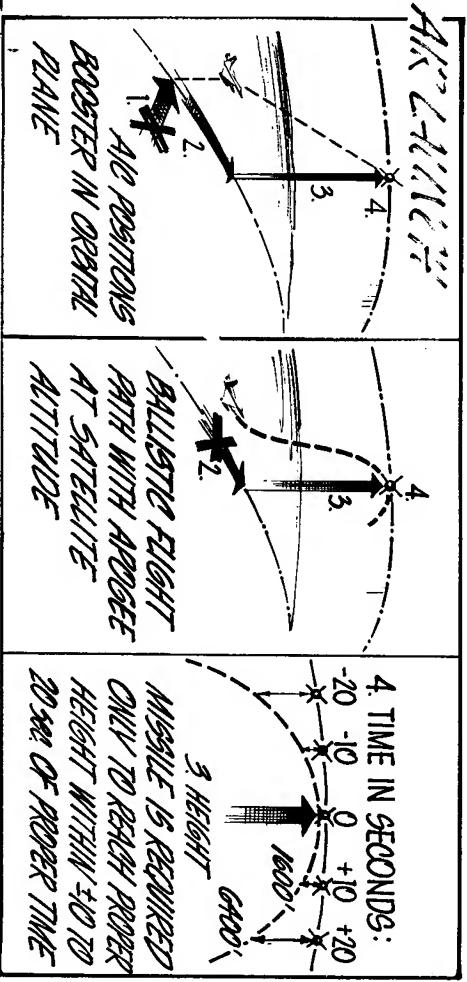
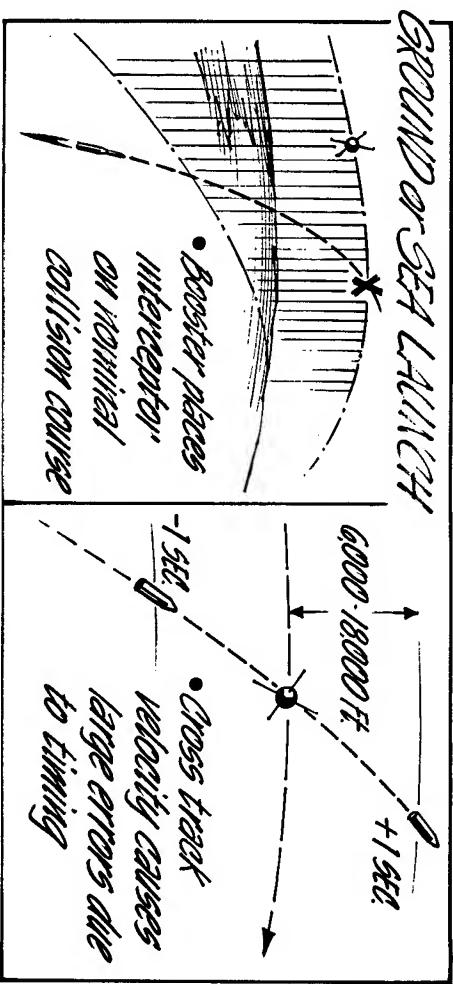
SATELLITE INTERCEPTOR SYSTEM AD0-90

REQUIREMENTS

- EARLY CAPABILITY
- DIRECT INTERCEPT
- COLD WAR SYSTEM
- COVERT CAPABILITY
- NUCLEAR or NON-NUCLEAR KILL
- EXISTING BOOSTERS
- 800-1000 N.M. CAPABILITY
- COMPATIBLE WITH SPADATS



LAUNCH TECHNIQUES



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Ground

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COMPARISON OF LAUNCH TECHNIQUES

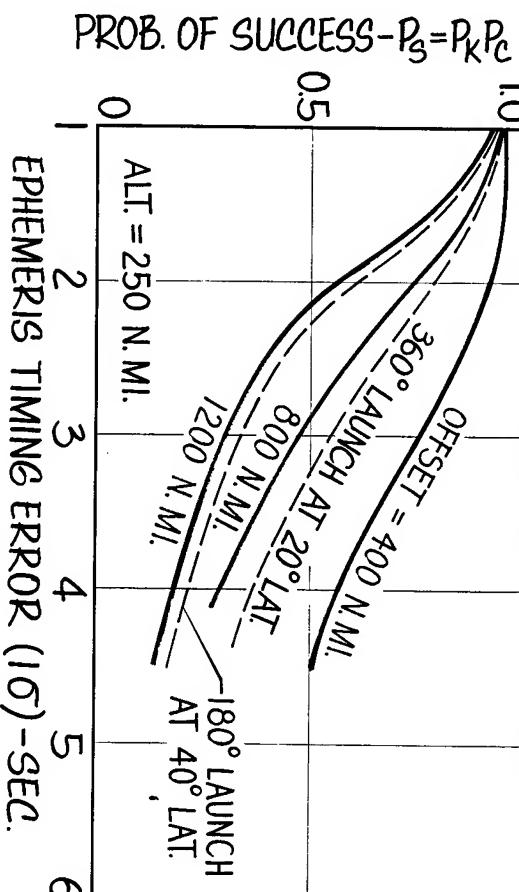
APPROACH

ANALYSIS OF:

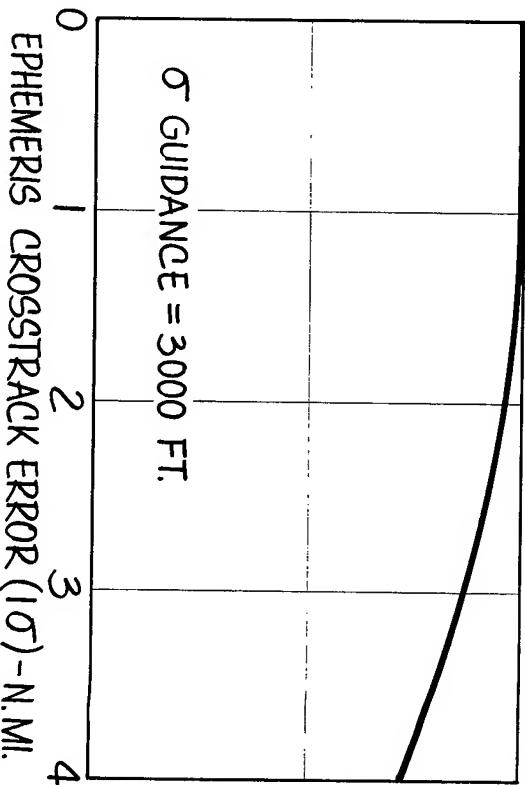
- SPADATS CAPABILITY/ACCURACY
 - EFFECT OF TERMINAL GEOMETRY ON MISS DISTANCE
 - ERROR CORRECTION CAPABILITY
 - WARHEAD DEPLOYMENT ERRORS
- TO DETERMINE:
- INTERCEPT GEOMETRY FOR MAXIMUM EFFECTIVENESS
 - INFLUENCE OF ERRORS

RESULTS

SURFACE LAUNCH
EPHEMERIS TIME ERROR MOST IMPORTANT



AIR LAUNCH
EPHEMERIS CROSSTRAK POSITION MOST IMPORTANT



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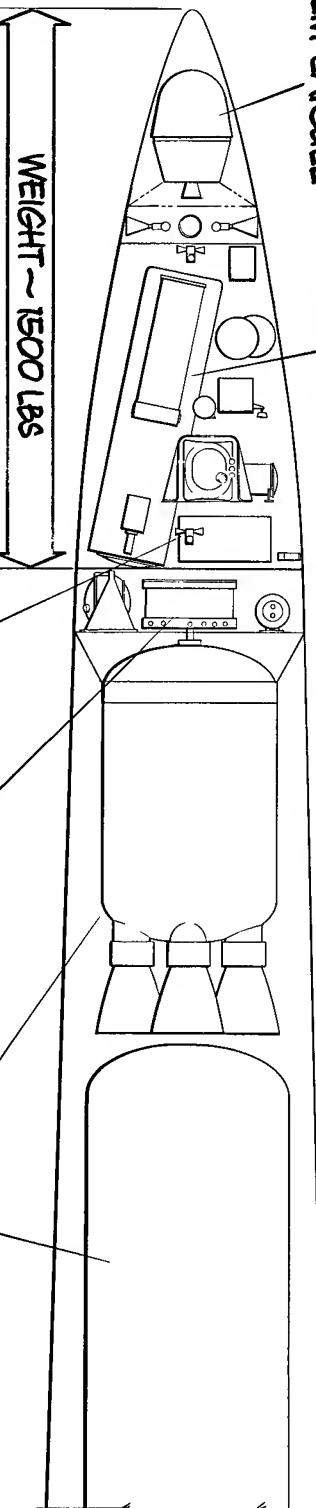
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COMPARISON OF TOWN HALL & SATELLITE INTERCEPTOR

TOWN HALL

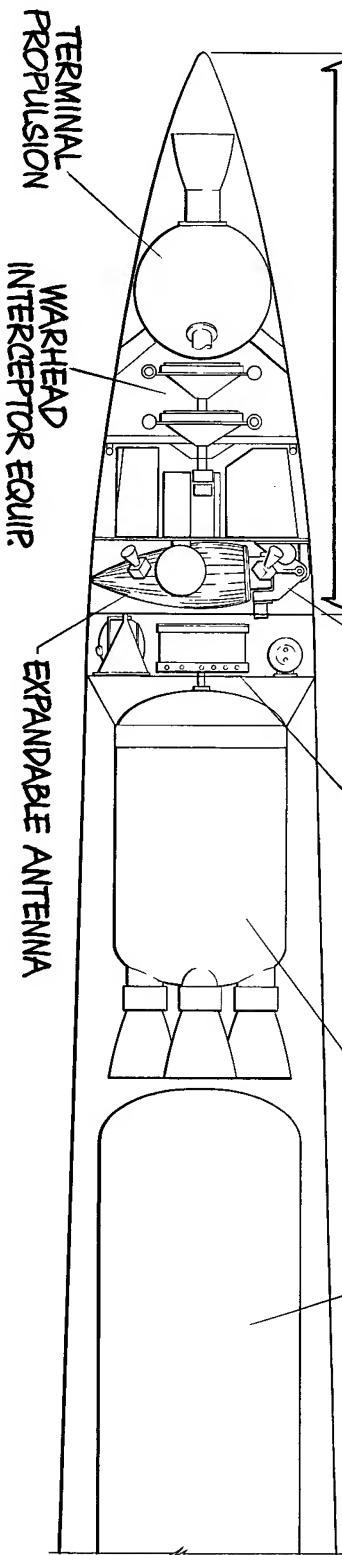
RECOVERABLE
FILM CAPSULE
CAMERA



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ATTITUDE
GUIDANCE

BOOST
BOOSTER



SATELLITE INTERCEPTOR

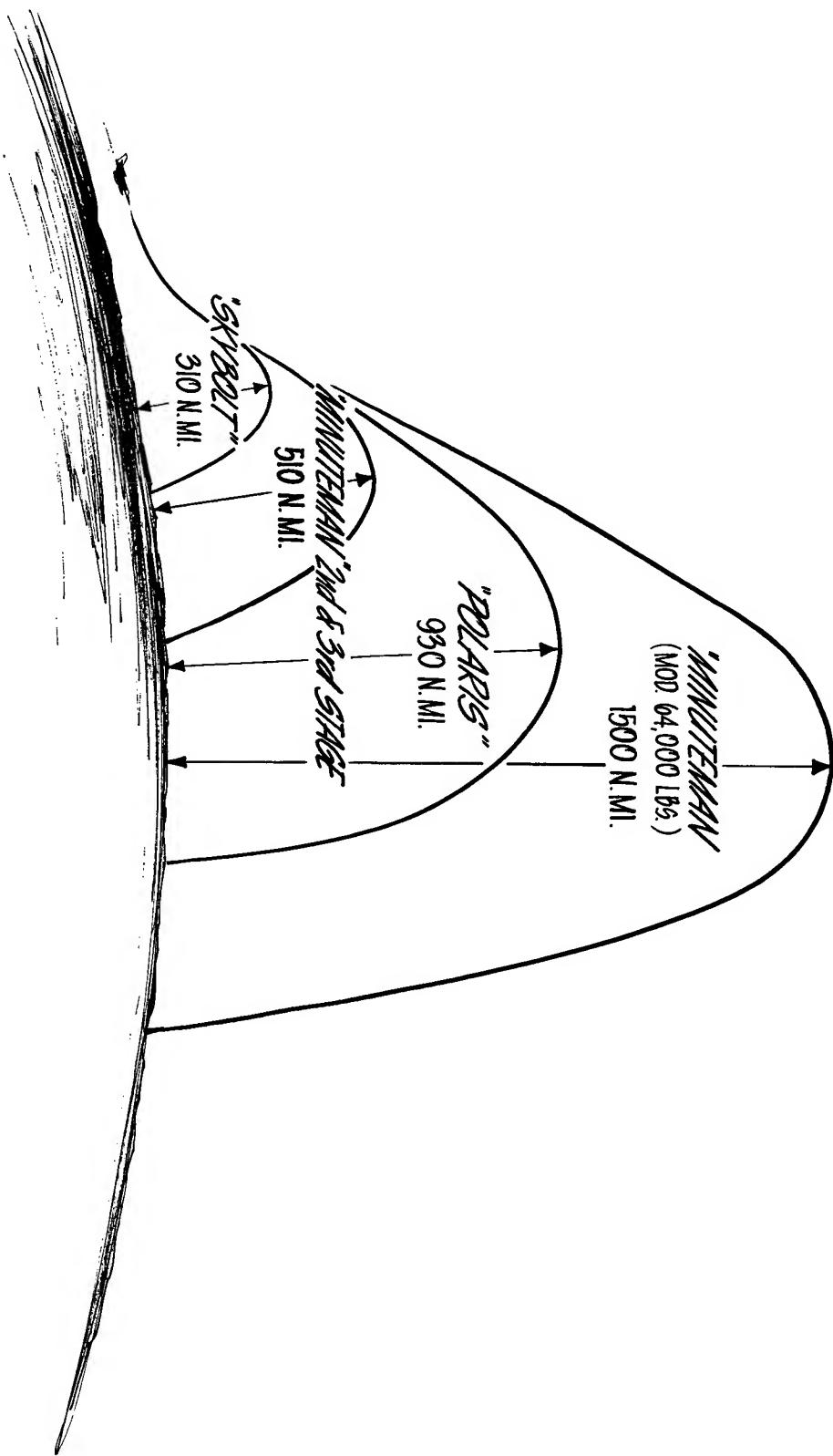
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BOoster CAPABILITIES

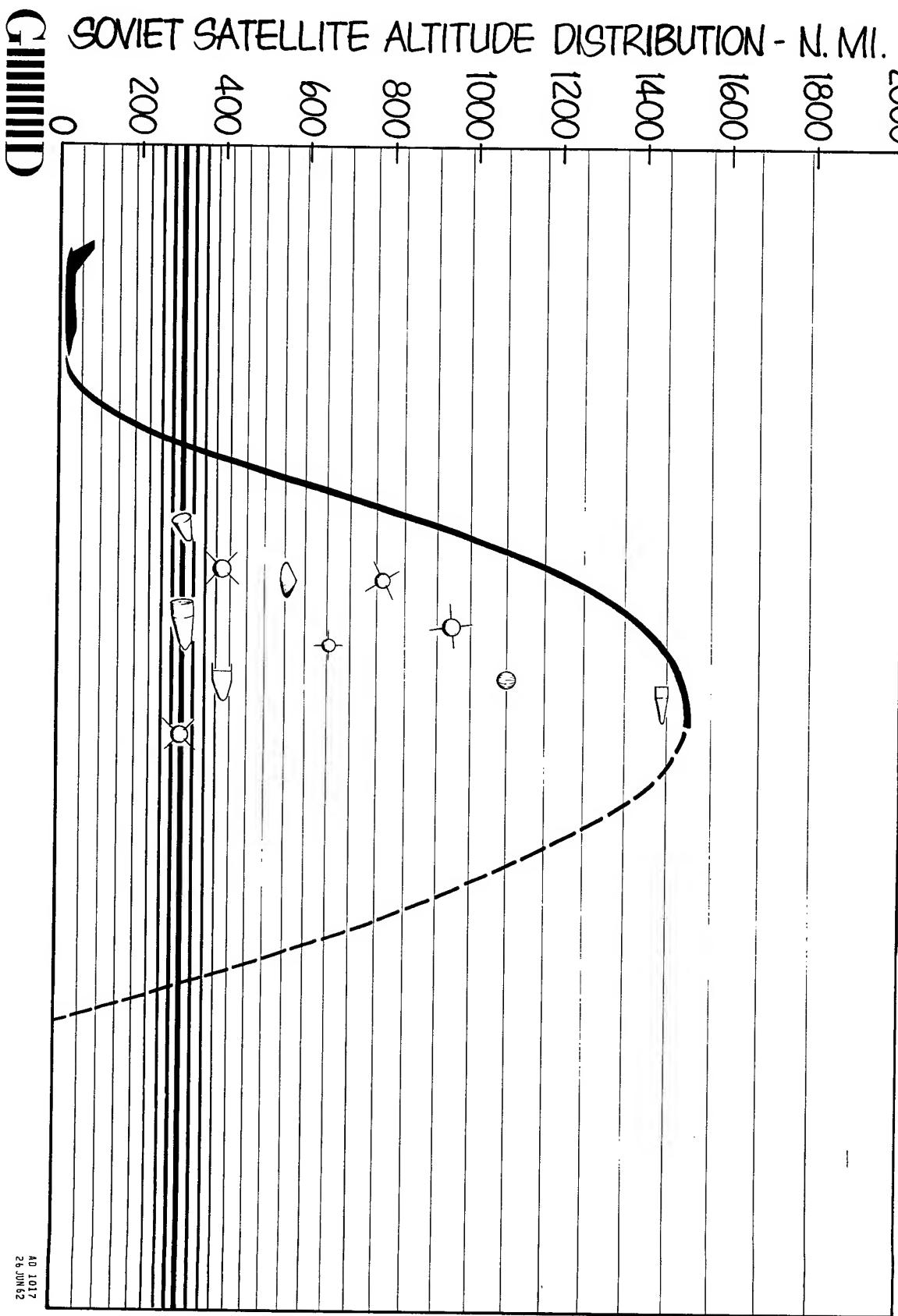
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BOOSTER/AIRPLANE CAPABILITIES

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SYSTEM OPERATION

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PRE-FLIGHT

ALERT

- AIRCRAFT PREPARED FOR FLIGHT
- MISSILE GUIDANCE ALIGNED AND TRIMMED
- INITIAL EPHemeris AND TRAJECTORY LOADED
- SYSTEM CHECK-OUT

COMPOSITE FLIGHT

- AIRCRAFT FLOW TO PRE-COMPUTED COURSE
- MISSILE GUIDANCE NAVIGATES AIRCRAFT
- UPDATED EPHemeris ENTERED

BOOST

- LAUNCH POINT DETERMINED BY GUIDANCE COMPUTER
- BOOSTER BURNS OUT WITH VELOCITY IN ORBIT PLANE
- INTERCEPTOR SEPARATES FROM BOOSTER

LAUNCH
COMMAND

TERMINAL PHASE

- INTERCEPTOR SEARCHES EXPECTED AREA
- TARGET ACQUIRED AT - 50-80 N.M.
- LOS, RELATIVE BEARING & ANGULAR RATE ESTABLISHED
- INTERCEPTOR YAWED 90° FROM LOS
- ENGINE IGNITED TO THRUST TOWARD ORBIT
- WHEN LOS RATE IS ZERO VEHICLE YAWED TO THRUST ALONG LOS ON COLLISION COURSE
- WARHEAD DEPLOYED ON RANGE-TO-TARGET BASIS

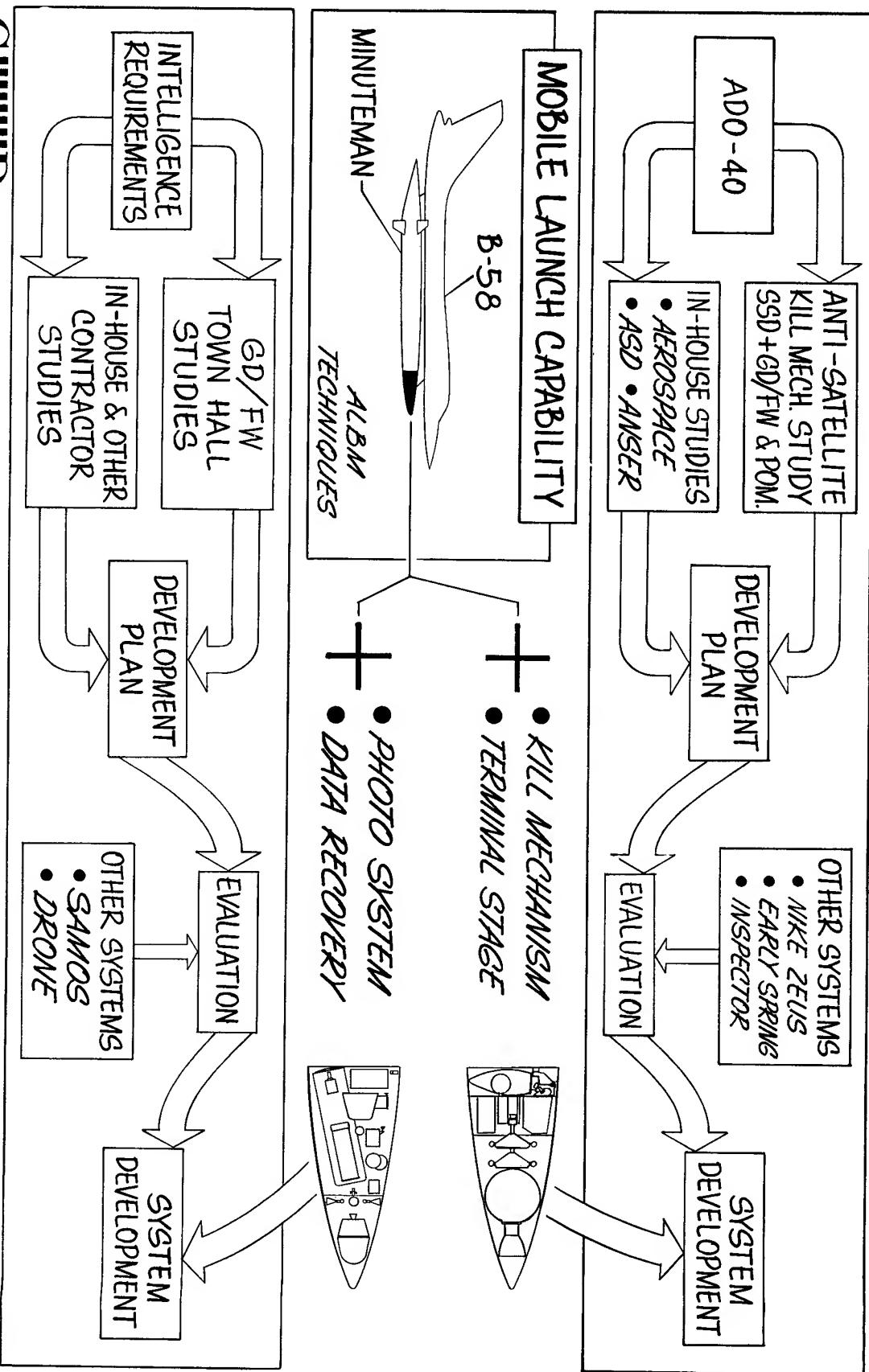
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ADD-40/TOWN HALL RELATIONSHIP



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CONCLUSIONS AND RECOMMENDATIONS

- ADD-40 system and various covert recon. systems are being studied and evaluated by separate contractor and USAF groups.
- This dual separate approach may well result in choice of two systems, optimum for each mission, but entirely different in hardware items.
- The mobile launch concept is competitive for each mission and should be evaluated simultaneously by USAF personnel cognizant of both missions.
- Choice of mobile launch concept could lead to greatly reduced development costs, operational costs and reliability improvements through adoption of a standard boost vehicle for dual purpose use.

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